

## AN ADDITIONAL USE FOR ANT LARVAE (HYMENOPTERA: FORMICIDAE)<sup>1</sup>

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**ABSTRACT:** The only food of the queen of *Mystrium mysticum* Roger is the hemolymph of larvae.

Of what use are ant larvae? The obvious answer is to build up and maintain the labor force of the colony and, sometimes, for the production of reproductives. Another use, seldom mentioned, is that in times of famine they may be eaten as a reserve supply. In the 1970s and 1980s we have seen numerous references to a third which we discussed at some length in 1979 (p. 334-336) and epitomized in 1986 (p. 696) with a borrowed sentence: "Adult ants are dependent on soluble proteins and amino acids from the larvae, which digest protein for the whole colony."

Now comes a fourth function, which is a bit startling when one considers the "tender loving care" ants are supposed to give their young: queens cut holes in the integument of the larvae and feed upon the exuding hemolymph. We refer to Masuko (1986), who has summarized his findings as follows: "The queens of larger colonies of the primitive ant *Amblyopone silvestrii* are exclusively dependent on the hemolymph of their own larvae as a nutrient even when prey feeding is possible. On the other hand, the foundresses suppress larval hemolymph feeding (LHF) when prey is available, allowing them to rear the first workers more swiftly. The nondestructive form of cannibalism can be regarded as a nutritive adaptation related to: (1) the lack of social food transfer in this species, and (2) its specialized predation on large sporadic prey (centipedes)." (p. 249.) Later he added: "These facts suggest that, even under natural conditions, the potentially destructive effects of LHF on the larval population is not profound" (p. 251).

It is a strange coincidence that while Masuko was studying larval hemolymph feeding in *Amblyopone silvestrii* Wheeler in Japan, Gerhard Wegener was observing a similar phenomenon in Basel, Switzerland in *Mystrium mysticum* Roger collected in Madagascar. *Amblyopone* and *Mystrium* are closely related, both belonging to the ponerine tribe Amblyoponini.

We corresponded with Wegener about *Mystrium* larvae throughout 1985 and tried to persuade him to publish his results, but he declined. He

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has, however, urged and approved publication of this report of his pertinent observations:

Handling larvae to get hemolymph is the only occupation of the queen in an established colony (besides egg laying, of course). The queen holds the larva between her mandibles and kneads it. This causes the larva to writhe and wriggle. Apparently this results in cuts in the integument by the queen's many acute mandibular teeth. "This could explain the numerous 'black spots of healing' all over the body." Small clear drops ("like beads of perspiration") appeared all over the body. This "perspiration" is apparently the queen's liquid supply.

The main aim of this treatment, however, is to produce a second kind of secretion: "a large drop of milky, granular, viscous consistency (like that of a cut open insect pupa) in the intersegmental membrane at the front edge of AII." This is on the dorsal surface in the groove between the first and second abdominal somites. This secretion is not followed by a scar. It "must be the queen's food-supply."

#### LITERATURE CITED

- Masuko, Keiichi. 1986. Larval hemolymph feeding: a nondestructive parental cannibalism in the primitive ant *Amblyopone silvestrii* Wheeler. Behav. Ecol. Sociobiol. 19:249-255.
- Wheeler, G.C., and Jeanette Wheeler. 1979. Larvae of social Hymenoptera. Chapt. 7. pp. 297-338. In H.R. Hermann, ed. Social Insects. Vol. I. Academic Press, New York.
- Wheeler, G.C., and Jeanette Wheeler. 1986. Ten-year supplement to "Ant Larvae: Review and Synthesis." Proc. Entomol. Soc. Washington 88:684-702.